

A METHOD OF OPERATION IN EXTENSIVE CANCEROUS GROWTHS OF THE CHEEK INVOLVING THE JAW.*

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PRIMARY cancer of the mucous membrane of the cheek is a rare disease. Beginning often as a small ulcer at the site of an abrasion, or caused, perhaps, by the irritation of the sharp edge of a carious tooth, it spreads more or less rapidly, until it finally involves the whole thickness of the cheek. Laterally, it spreads to and involves the alveolar processes of one or both jaws, the hard palate, sometimes the floor of the mouth, and may extend backward to the pillar of the fauces and tonsil.

In the early stages it may not give rise to much pain, but sooner or later it is apt to take on the character of a rapidly spreading septic inflammation of the cheek, causing great pain, as soon as the branches of the fifth nerve are implicated, and trismus from spasm and infiltration of the Masseter muscle. If seen at this stage, and the previous history is not carefully enquired into, the real nature of the condition may pass, for a time at least, entirely unsuspected. When the outer skin of the cheek becomes involved in the extension of the growth, perforation and the formation of a foul ulcer communicating with the mouth rapidly follows and the wretched patient worn out by the pain, and loss of sleep, and partial starvation on account of the difficulty in mastication and swallowing, rapidly loses ground, and dies of exhaustion and sepsis, unless his sufferings are more rapidly ended by the development of an intercurrent pneumonia.

* Read at a meeting of the Society of Alumni of Bellevue Hospital, New York, March 2, 1908.

Curiously enough, glandular involvement of the tributary lymphatics is not necessarily deep nor extensive, even in advanced cases, as instanced in my own, and internal metastases may not be present at any time. It is this astonishing fact alone which gives us courage to attack these apparently hopeless cases by radical surgery, in the hope of affording even a lasting relief in some of them.

The magnificent work of Crile, in a large series of operations for the removal of extensive cancerous growths of the neck and face, by a block removal of all the affected tissues, whether bone, or soft tissue, after a temporary closure of the common carotid artery by his special clamp, points the way to results supposed hitherto to be unattainable.

A statistical paper¹ of great value, published last year by Anton Meller in the *Zeitschrift für Krebsforschung*, 1907, 16, 64, gives the results of a careful study of epithelial carcinoma of the head and neck, based upon the review of 327 cases of epithelioma observed in Hochegger's clinic in Vienna, between the years 1894 and 1904.

The accumulated figures obtained from the study of such a great number of cases cannot help but be useful, and in this special instance, stimulating. It should serve also to correct various erroneous impressions which exist and which may have been derived from an unfortunate personal experience or from too hasty generalization based upon insufficient observation.

The results of the operation in this great series of cases are most interesting and suggestive. For example, it was found that in 50 per cent. of them, there was no recurrence after operation, within the three-year period, and of those cases which were operated on for recurrence, 21 per cent. remained free. Meller found moreover, that recurrence when it did occur was most often local, rather than in the glands, and that internal metastases had rarely occurred before the patients came to operation.

¹ Zur Statistik der Hautcarcinome des Kopfes und Halses.

He found also that cancers in certain regions were more dangerous as regards glandular metastasis than in others; for instance, in the case of the lower lip, this involvement was found in 90 per cent. of all of them, while in cancer of other parts of the head and face, gland involvement was observed in but 18 per cent. to 43 per cent. It was found moreover, that the removal of infected glands up to the size of a pea or walnut, always gave good results when they only occurred in small groups or singly, but in those cases where the glands could be followed down to the clavicle, others would usually be found in the mediastinum.

Finally it was found that in really "inoperable" cases, an operation materially hastened the end by hastening extension along the opened up channels and mutilated tissues; and Meller declares boldly that similar bad results often follow rough attempts at removal of perfectly operable growths by inexpert operators in this field of work; which statement is borne out by the observations of most surgeons.

During the past year, three cases of extensive epithelioma of the inner lining of the cheek and involving the jaw, have come under my care, and the condition in all of them was so distressing that an extensive mutilating and dangerous operation seemed justifiable as a measure of relief, even though the chances of a radical cure seemed somewhat problematical. The experience gained in my attempts to effect the removal *en bloc* of all the visibly infected tissues, whether bone, muscle or skin, in an orderly and comparatively bloodless manner, may not be without interest to those of you who may be called upon to advise or operate in similar cases.

In the first case, operated upon in June, 1907, at the Roosevelt Hospital, much valuable experience was gained, and an operative technic developed which was useful in the later cases which form the basis of this paper. Operative recovery resulted in this, as in the other cases, but recurrence at the site of the scar took place within two months, which, on account of the patient's age (65) and rather feeble condition, was not subjected to further operation, and he died

of exhaustion in about four months from the time of the operation. In this case a large piece of the cheek and nearly one-half the lower jaw were removed, and the defect was closed in by a plastic flap taken from the skin of the neck. The growth in this first case was more closely localized to the mucous membrane of the cheek and the alveolar process of the lower jaw than in the later cases, and in a younger and more vigorous subject, an operation would doubtless have given more lasting results.

In the two cases which form the real basis of this paper, and in which the steps of the operation to be described were developed, the growth had involved a very wide area, as will be seen, and while too short a time has elapsed to predicate the ultimate result, the writer feels that as recurrence at the site is more probable in these cases than at a distance, and with the hope that it may be perfectly feasible to deal with such recurrence in the event of its appearance, the operation is not only a justifiable procedure, but really a desirable one even if it affords only a respite from the suffering that these unfortunates are obliged to undergo.

Both cases are alive and well at the end of about three months, and both are steadily gaining weight, the first one having gained about twenty pounds and the second about ten pounds.

The following is a review of the history of these two cases:

CASE 1. Francesco de G., Italy, age 43, M., ragpicker. Admitted to Bellevue Hospital, January 6, 1908. In America five years. Irregular habits as to eating, drinking, and sleeping. Moderately alcoholic. Smokes and chews tobacco. Syphilis, doubtful. Generally in good health. Family history negative.

Present Condition.—About a year before a small "pimple" appeared upon the inner surface of the left cheek and was cut out by a physician, but never healed. The growth in the mouth began to ulcerate and to extend laterally and in depth, until the cheek was perforated about three months ago, since when his condition has become more and more wretched. There is no

history of injury to the jaw but the teeth have always been bad he says, though those adjacent to the growth had never troubled him and appear to be sound.

Examination revealed an ulcer involving the whole thickness of the left cheek about the size of a silver half dollar, its centre opposite the 2nd molar tooth, its edges hard, irregular in outline and undermined, and the surrounding tissues widely infiltrated. There is a very foul smelling discharge from the ulcer and it is mixed with the saliva which is very abundant and very offensive. The pain extending up into the head is very distressing and sleep without opiates is impossible. There is spasm of the Masseter muscle with marked trismus, and it is difficult to pry open his jaw, even a little, to examine the inside of the cheek and determine the extent of the growth. The patient is beginning to emaciate and is rapidly losing strength. His feeding is limited to fluids, part of which are lost through the large hole in the cheek.

The lymphatic glands below the jaw are considerably enlarged and adherent to the skin and each other, but do not extend very far down the side of the neck, *i.e.*, apparently not below the level of the cricoid cartilage.

Examination of a section of the edge of the ulcer, shows it to be epithelioma. The patient has been refused operation at two hospitals, but, in view of his age, 43, and the comparatively small glandular metastasis, as well as of his urgent prayer for relief from his wretched condition, the operation was undertaken on January 11, 1908.

CASE 2. Walter T., U. S., laborer, 52 admitted to Bellevue Hospital 1-1-'08. Family and previous history, negative. Generally in good health, moderately alcoholic, smokes and chews tobacco, pretty steady pipe smoker and in the habit of tucking his pipe into the right angle of the mouth, *i.e.*, on the affected side. His trouble began five months before with a small ulcer in the mucous membrane of the right cheek at a point which was constantly irritated by being caught between his teeth. The ulcer increased in size, slowly at first, but lately the whole cheek has become involved in what seemed to him an inflammatory process. Six weeks before he began to suffer from pain of increasing severity, which pain was in the cheek and extended up into the head and lately it had become so

severe that he could not sleep, and an increasing stiffness in the movements of the lower jaw had rendered eating a painful and unsatisfactory process.

Examination shows a deep ulceration of the mucous membrane of the right cheek about opposite the second molar tooth, and extending to the alveolar process and backward to an extent undetermined on account of the inability to pry open the mouth wide enough to get a better view. The lymphatic glands in the submaxillary region were enlarged, very hard, but were not adherent to the skin nor did they extend far down the side of the neck.

The heart and lungs are normal and there is no evidence of internal metastasis. Section from the growth shows it to be epitheliomatous, and an operation was advised. During his stay in the hospital his condition became more unbearable and the growth increased in extent until the cheek was finally perforated the day before the operation, which was done January 20, 1908.

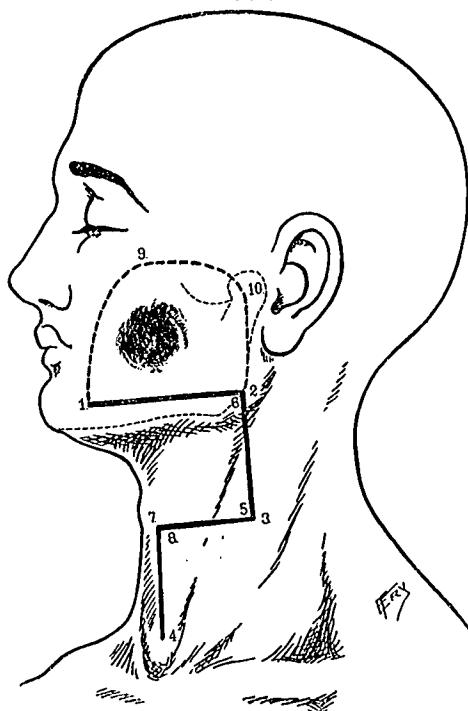
Both cases, it will be noticed, were comparatively young men, and, while their condition was far from promising, they both willingly submitted to operation. As the tissues of the cheek were very widely involved in both cases, necessitating a wide opening into the cavity of the mouth, it became evident that some form of plastic operation would have to be devised, which would provide for the immediate closure of this gap, provided it would not add materially to the length and danger of the procedure.

With this in view, a plan of operative attack was worked out by which the growth in the cheek and jaw could be removed, together with the infected tributary lymph-nodes in the neck, in one piece, from below upward, with the least possible shock and hemorrhage, and the hole in the cheek rapidly closed by a plastic flap taken from the neck and turned back in the course of the exposure of the cervical lymph-glands to be removed.

Description of the Operation.—An incision (1, 2, 3, 8, 4—see Fig. 1.) was made through the skin, and the flap 1, 2, 3, 8, was turned forward toward the median line, exposing the lower border of the inferior maxilla, the platysma overlying the submaxillary gland, and the deep structures of the neck.

The sternomastoid muscle was freed along its anterior border, thus exposing the chain of enlarged glands extending from the submaxillary space to below the level of the cricoid cartilage. Beginning below, the entire chain of lymphatic glands along the internal jugular vein and beneath the sternomastoid

FIG. 1.

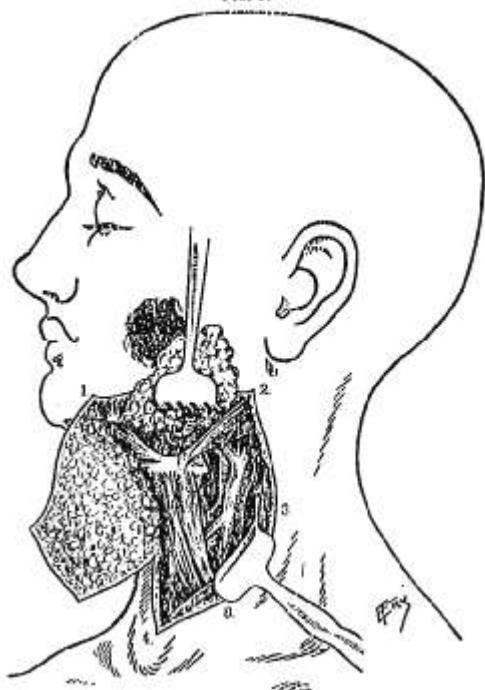


The heavy lines mark the outline of the flap from neck to cover defect left in cheek, portion circumscribed by dotted line.

muscle was removed, together with any periglandular fat that might be adherent to them, in one piece, from below upward, until the bellies of the digastric came into view, and then the contents of the submaxillary space both the salivary and the lymphatic glands were shelled out cleanly and retracted upward in one piece. The external jugular and facial veins were ligated

and divided, and the external carotid artery was isolated and divided between ligatures of chromic gut, just above the origin of the superior thyroid branch. The outer surface of the lower jaw having been exposed and cleaned ready for section, and the neck-wound protected by gauze packing, the skin of the face was

FIG. 2.

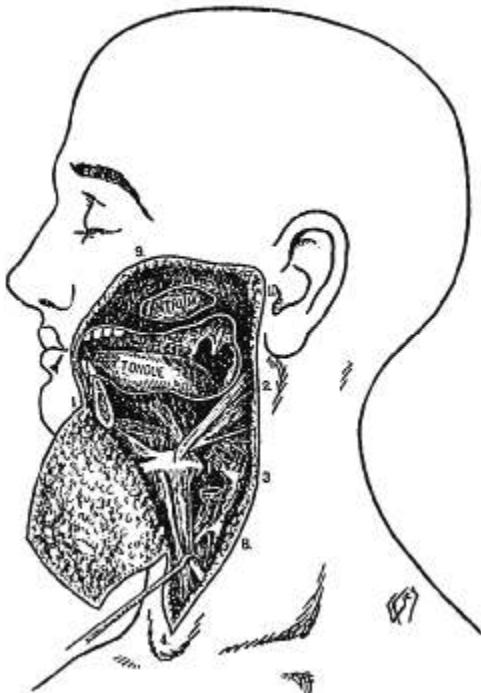


Skin flaps retracted, showing exposure obtained. Deep glands dissected up and extracted.
External carotid ligated.

divided in such a manner as to widely circumscribe the growth along line 1, 9, 10, 2 (Fig. 1.) and the mouth rapidly entered. The jaw was then divided with a gigli saw through the socket of the canine tooth, the extent of the growth within the mouth being now plainly visible. When the cut end of the jaw was retracted, incisions through the mucous membrane well clear of the growth were made.

The mucous membranes and structures of the cheek were divided along the alveolar margin of the upper jaw, back to the molars and the floor of the mouth was divided along the groove of the tongue. This severed the mylohyoid and the hyoglossus muscles. The inferior maxilla and attached struc-

FIG. 3.



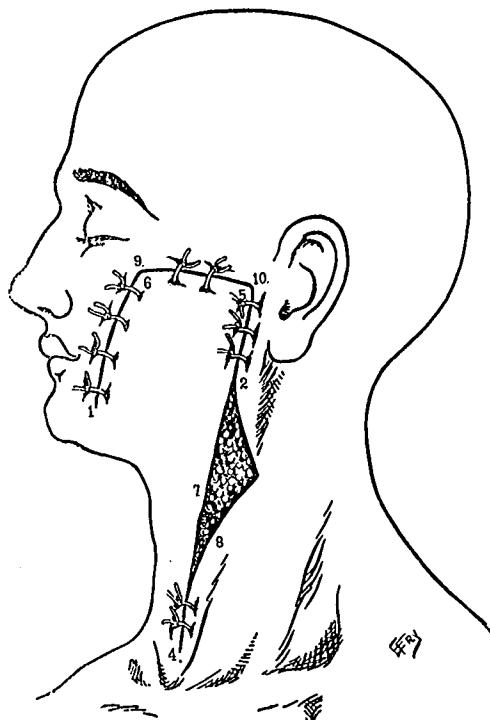
Tumor removed with large portion of cheek and $\frac{1}{4}$ the lower jaw and portion of upper jaw.
Cavity of mouth opened.

tures were then retracted outward, and, as the growth, in Case 2, was found to involve the posterior border of the alveolar process of the upper jaw and hard palate. The alveolar process of that bone was removed with a chisel from as far forward as the canine tooth and with it, the floor of the antrum, the pyramidal process of the palate bone, the lower end of the internal pterygoid plate, with hamular process, the lower end

of the external pterygoid plate, and a portion of the malar bone (see Figs. 2 and 3.). Upon disarticulating the inferior maxilla rather sharp venous oozing ensued, but was easily controlled by gauze packing.

To close up the large defect left in the cheek, the mucous

FIG. 4.



Plastic flap from neck sketched in place covering defect in cheek.

membrane at the side of the tongue was united to the cut edge of the hard palate, the tongue thus being elevated as a sort of wedge against leakage from the mouth. The edges of the cut mucous membrane in front and behind this were united by suture, and the cut edge of the mylohyoid muscle was brought up over this line of union of the mucous membrane, and the skin

flap shown in figure 4 was then sutured up to fill in the defect in the cheek. A portion of the incision in the neck was left unsutured and filled with loose gauze packing extending up to the glenoid and temporal fossa, and this packing was left in place for several days until granulation was established.

The essential features of the operation are rapid, clean dissection with a sharp knife, careful retraction to avoid bruising of the tissues, isolation and removal of all the glands and infected fat in the area tributary to the growth, preferably from below upward, and with the least possible handling, ligation of the external carotid artery or temporary compression of the common carotid, after the method of Crile, stopping all bleeding, and finishing the work in the neck and clearing the jaw before the cavity of the mouth is entered, then rapidly removing the tumor, skin, bone, and infected glands, *en bloc*, and completing the operation as soon as possible by stitching the plastic flap into place and providing for drainage and suture of the neck.

The use of the tongue as a barrier to help close in the defect in the cheek is practical and tends to diminish the chances of early leakage from the mouth. The patients are bolstered up in bed as soon as out of ether and set up in a chair the second day if possible. Feeding through a tube passed through the nose becomes a necessity during the first few days after operation, especially if the rectum is intolerant, and allows healing to take place with the minimum of leakage and infection. Moderate infection occurred in both cases, but was not ever a serious factor. Some sloughing of the flap occurred in the first case, as it had to be shaved very thin by reason of the subcutaneous cancerous involvement, and the skin defect remains in cheek. In the second case, the flap was very effectual, although there are still one or two small points, rapidly closing in, where slight leakage from the mouth has occurred. Both patients are entirely relieved of their pain and both can eat solid food with comfort.

This operation, as described, is offered as an available method of attacking extensive growths of the cheek and jaw, the removal of which necessitates a wide opening into the cavity of the mouth, and in which it may seem best to do the operation in a single sitting instead of in two stages.

It is original, in so far that the writer has never seen it done or described, but in this day of surgical progress one hesitates to call any operation a new one.

The photographs were taken before the complete healing of the wounds and are offered merely to show the general outline of the plastic flap, and the deformity resulting from so extensive an operation. It will be noticed in the photograph of Case 2, that the cosmetic result is much the better, although the bone removal was much more extensive, possibly because the lower jaw was sawn farther from the median line in this case, thus preserving the outline of the chin.

At the end of three months there is a slight local recurrence in the upper edge of the cheek opening in Case 1 which will be promptly removed. In Case 2 there are no evidences of recurrence. Both cases have enjoyed a period of complete respite from their sufferings, and both appear to be in good physical condition.

Fig. 5a



Front view, showing deformity about 3 weeks after operation.

Fig. 5b



Side view, showing plastic flap with partial neurosis of upper edge and angle.

Fig. 6.



Side view, showing plastic flap in place, healing nearly perfect, 2 weeks after operation.

Front view, showing the temporarily slight deformity.